



# CEMData

A fully integrated PC-based data acquisition and report generation package developed specifically for the complex requirements of continuous emissions monitoring and reporting. CEMData is certified compliant with MCERTS Quality and Performance Standards for Environmental Data Management Software.

CEMData has been designed for maximum flexibility combined with ease of use, implemented via a hierarchical system of access control to the following levels:

- Application set-up *Project-specific assignment of measurements, alarms, status signals, acquisition parameters*
- Maintenance mode *On-line tools including built-in digital storage oscilloscope, assignable by software*
- Supervisor mode *Interpretation of legislation into report templates, set-up of all operator parameters, etc.*
- Operator mode *Real-time monitoring and report generation*

## System

Custom-assembled PC system to suit client's requirements, typically Intel Core i5 processor, 8GB RAM, 2 x 1 TB HDDs. Operating system Windows 11 Pro.

Integrated data acquisition and report generation software written in-house by LOWE Engineering.

Client-specific configuration to meet Environmental Legislation.

## Data Acquisition

Serial data I/O via RS232 ports.

RS485 data I/O via MODBUS ASCII and/or MODBUS RTU as MODBUS master or slave.

TCP/IP data I/O via LAN/WAN using Ethernet and MODBUS/TCP as client or server.

## Data security and backup

CEMData runs continuously and will re-start after a power failure.

Cost effective options include write-only archive on second hard drive, mirrored drives or RAID array.

Data stored in secure binary format, system security to US Dept. of Defence level C2.

## Data handling

CEMData maintains three rolling data archives of data, each widely configurable for frequency and archive length:

- Real-time data *typically written every 2s, over-written after 1 hour*
- Semi-historical data *typically written every 2s, over-written after 6 months*
- Main archive *typically written every 1min, over-written after 10 years – used for all report generation*

Time and date representation

All times are stored and displayed in UCT (=GMT).

Synchronization to national/international atomic radio clock or via LAN/Internet.

## Report generation

"One-click" report generation to user-generated pre-defined report formats

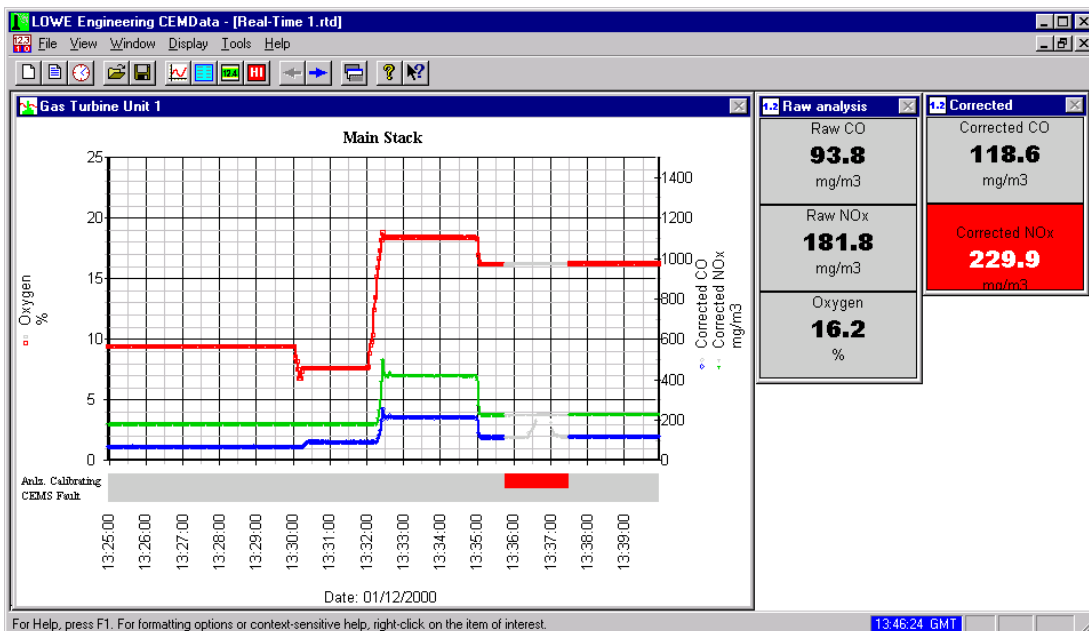
Fully automatic report generation and printing with flexible options for date/time logic

Custom reports on demand using pre-defined report formats or freely formatted by the user

## Historical data display

Powerful zoom feature for on-screen display of all semi-historical data over any interval up to 24 hours

Real-time data display screens with charts, tables, graphs, digital meters, emission countdown meters, annunciators.



Typical real-time display screen

**Report Template Manager**

Report Templates | Measurement Data | Digital Status Signals/Alarms

Report template: Daily emissions

Measurement name: mg/m3

Corrected CO  
Corrected NOx

Report period: Daily

Remove Add

Copy Settings

Paste Settings

Input data

10 minute averages  
1/2-hourly averages  
Hourly averages  
Daily averages  
Weekly averages  
Other: 1 minute

95% confidence interval

Deduct 95% Confidence Interval

Averages

Fixed period  
Rolling

Roll period

24 hours  
7 days  
Custom hours: 1

Rolling % within limits

% within limits

High limit A  
High limit B  
Low limit A  
Low limit B

Statistical data for the report period

Values not exceeded by:

95% of valid data points  
97% of valid data points  
Custom: 0 %

Percentiles:

95th percentile  
97th percentile  
Custom: 0 th

Interpolation

Use linear interpolation  
Use mean of higher/lower  
Use higher point  
Use lower point

Total data points

High limit A: 50  
High limit B: 150 mg/m3

Max. period above limit: ☒  
Cumulative time above limit: ☒  
Diary above limit: ☐  
Percent valid data points within limit: ☒

Missing Data...

Low limit A: 0  
Low limit B: 0 mg/m3

Max. period below limit: ☐  
Cumulative time below limit: ☐  
Diary below limit: ☐  
Percent valid data points within limit: ☐

OK Cancel Apply Help

Setting-up a report template

**Lowe Engineering Ltd**  
Unit 3B, Kitson Road,  
LEEDS LS10 1NT  
England



Tel: +44 (0)113 243 2997  
Fax: +44 (0)113 243 2529  
e-mail: sales@loweengineering.com  
www.loweengineering.com